



Building a Strong Governance and Control Framework for Algorithmic Trading

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Introduction

Over the past few years there has been an **increase of regulatory activity** in response to the significant growth in algorithmic trading globally.

Regulators note concerns over how the **increased speed and complexity** of markets has heightened the risks associated with trading activity.

As the regulatory environment continues to take shape in the UK, especially with the introduction of MiFID II and the publications by the PRA, FCA and FMSB, it is vital to be able to build an appropriate **governance and control framework** to manage the risks inherent in algorithmic trading and to comply with the new regulatory requirements.

1. Regulatory Overview



Regulatory Landscape – Selected Global View

Over the past few years there has been a surge of regulatory activity in response to the significant increase in electronic and algorithmic trading globally

International

- IOSCO Consultation and Task Force Reports (various)
- FX Global Code of Conduct (2017)

UK

- FCA Market Conduct Sourcebook Chapter 7A
- PRA Supervisory Statement 05/18
- FCA Review (2018)
- FMSB Statement of Good Practice

North America

- SEC Rule 15c3-5 Market Conduct
- FINRA Regulatory Notice 15-09; 16-21
- CSA National Instrument 23-103: Electronic Trading
- IIROC Notice on Provisions Respecting Electronic Trading (2012)
- CFTC Regulation AT (proposed)

Europe

- FINMA Circular 2013/08 & Code of Conduct
- BaFin Circular 06/2013 (BA) – Requirements for Systems and Controls for Algorithmic Trading of Institutions
- BaFin High Frequency Trading Act
- Market Abuse Regulation (2016)
- MiFID II (2018)

Hong Kong

- HK SFC Code of Conduct Licensed with the SFC, paragraph 18
- HK SFC Consultation Conclusions on the Regulation of Electronic Trading (2013)
- HK SFC Guidelines for the Regulation of Automated Trading Services (2016)

Singapore

- Singapore MAS Technology Risk Management Guidelines (2013)

Regulatory reviews have focused on the following thematic areas:

Governance



Testing & Deployment



Algorithm Controls



Monitoring








Documentation

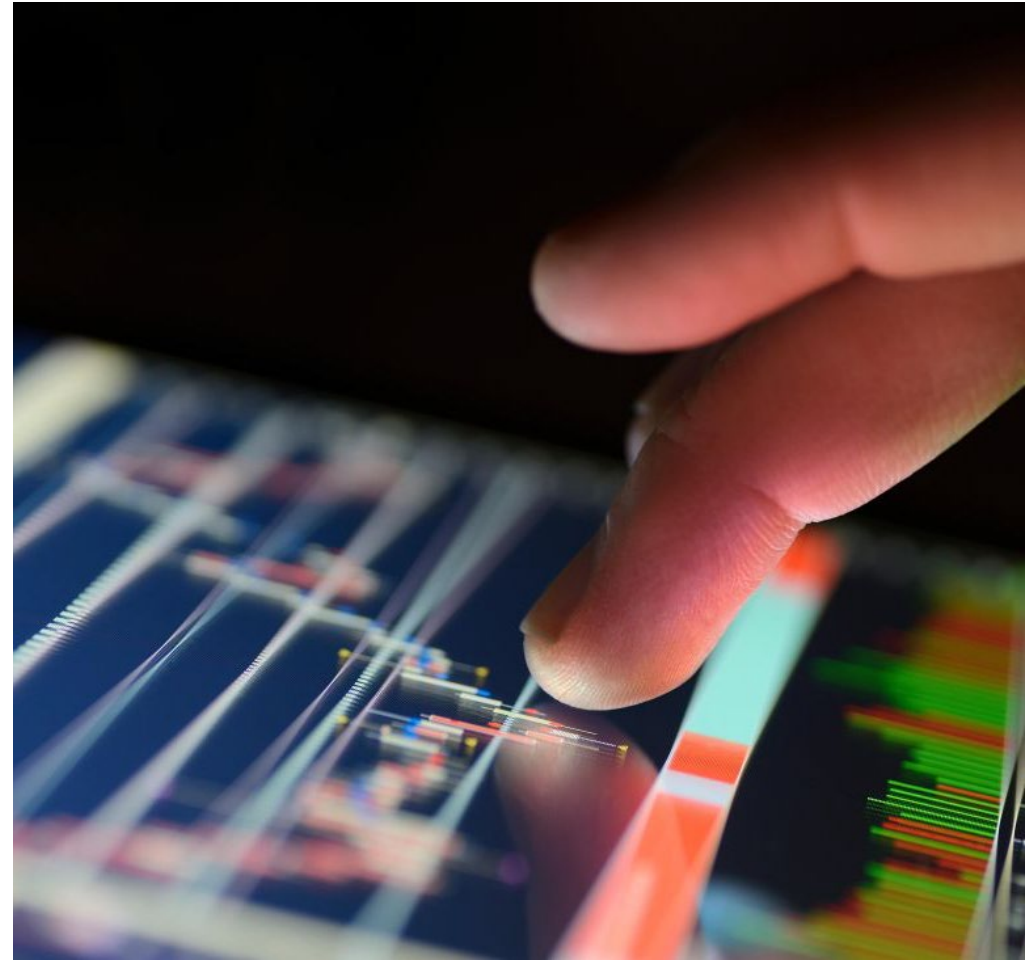


Regulatory Landscape – UK Focus

Key Requirements – MiFID II and recent publications by FCA and PRA

Principle	MiFID II: RTS 6	FCA Review	PRA Supervisory Statement
 Governance	<ul style="list-style-type: none"> • Clear lines of accountability • Segregation between 1LOD & 2LOD 	<ul style="list-style-type: none"> • Skills & knowledge of 2LOD and Senior Management • Process to identify all algorithms 	<ul style="list-style-type: none"> • Management body to maintain understanding of algo trading • Regular review of documentation
 Testing and Deployment	<p><u>Pre-deployment</u></p> <ul style="list-style-type: none"> • Testing and approval prior to deployment <p><u>Post-deployment</u></p> <ul style="list-style-type: none"> • Annual self assessment • Stress testing • Material change management 	<p><u>Development & Testing</u></p> <ul style="list-style-type: none"> • Comprehensive review and approval process • Must consider market conduct <p><u>Material Changes</u></p> <ul style="list-style-type: none"> • Appropriate process to define and identify material changes 	<ul style="list-style-type: none"> • Testing by independent team • All 2LOD's to sign off on the risks relevant to that function • Periodic re-validation of algorithms and controls
 Algorithm Controls	<ul style="list-style-type: none"> • Kill switches • Pre-trade controls • Post-trade controls • Etc 	<ul style="list-style-type: none"> • Maintain appropriate risk controls • Limits tailored to the type of trading activity • Regular review of limits & breaches 	<ul style="list-style-type: none"> • Algo trading to be consistent with firm's risk appetite • Risk mitigation plan for control failure
 Monitoring	<ul style="list-style-type: none"> • Real Time monitoring • Automated Surveillance 	<ul style="list-style-type: none"> • Surveillance in terms of MAR • Monitoring and surveillance tailored to algo trading activity 	<ul style="list-style-type: none"> • Internal audit review of algo trading • Assess intra-day risk exposures
 Documentation	<ul style="list-style-type: none"> • Governance Arrangement • Records of Material Changes • Testing and deployment methodology 	<ul style="list-style-type: none"> • Algorithm inventory • Comprehensive audit trail of deployment process 	<ul style="list-style-type: none"> • Algorithmic trading policy • Controls and Algorithm inventory • Kill switch procedure

2. Building a Control Framework



Building a Strong Control Framework

Key factors which underpin a strong control framework



Building a Strong Control Framework (continued)

Key factors which underpin a strong control framework

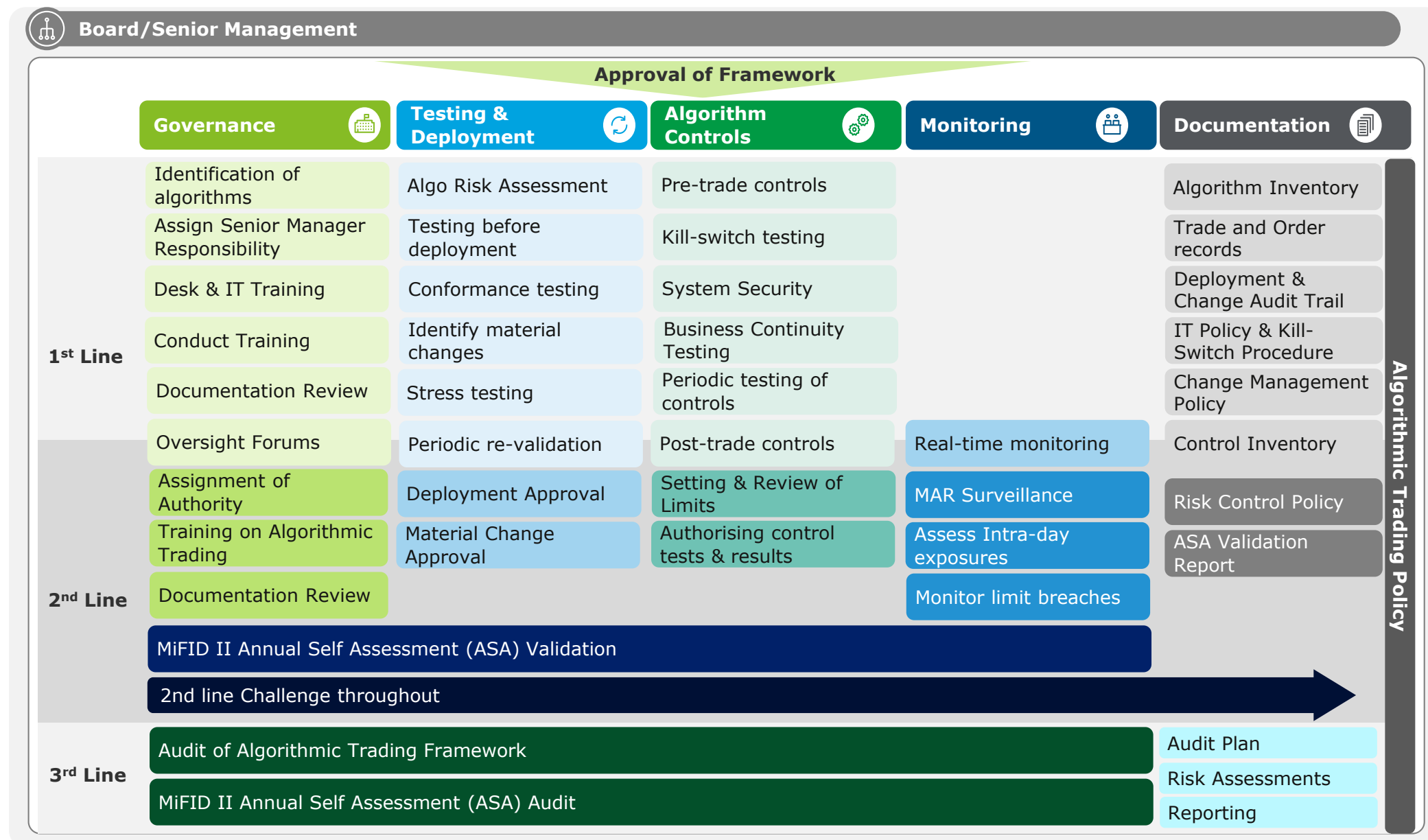


3. Example Control Framework








Control Framework Overview

Illustrative 3 LOD Algorithm Control Framework incorporating regulatory requirements and industry best practice



Control Framework Overview (cont.)

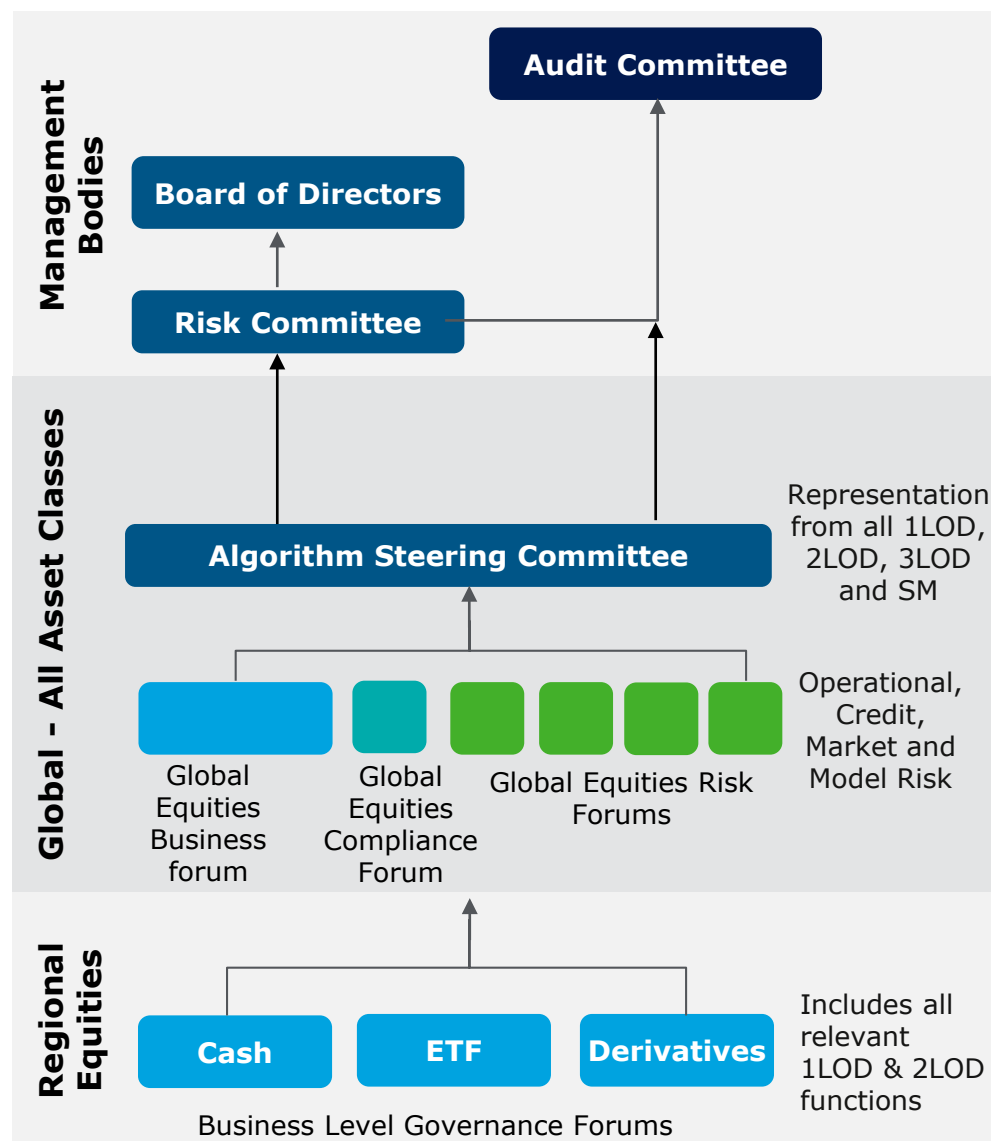
Deep-dive on example 2 LOD Algorithm Control Framework

	Compliance	Operational Risk	Market Risk	Credit Risk	Model Risk
 Governance	Attendance of Oversight / Governance Forums				
	Training on Algorithmic Trading				
 Testing & Deployment	Approval of algorithms prior to deployment				Model Validation
	Approval of Material Changes				Conceptual Soundness Review
	Periodic Algorithm re-validation*				
 Algorithm Controls	Definition of compulsory key algorithm controls				
	Approval of test cases & results				
		Setting & Regular Review of Limits			
 Monitoring	MAR Surveillance	Review and action of limit breaches			
		Approve Kill-Switch Testing	Intra-day risk monitoring		
 Document-ation	Input into development of overall algorithmic trading policy				
		Development of Risk Control Policy			
	Periodic Review of Risk Assessment documentation				

*Regulatory guidance does not specify where the responsibility should sit and this could be suitable in any second line function

Example Governance Framework

Example governance structure for oversight of algorithms. Whilst we present an interface with Equities this structure may sit across asset classes.



Key Tasks and Agenda Items

Audit Committee

- Key algorithmic trading risks
- Regulatory findings and status of remedial action plans

Board of Directors

- Define strategic objectives for algorithmic trading
- Status of remediation plans

Risk Committee

- Monitoring of key algorithmic trading risks

Algorithm Steering Committee

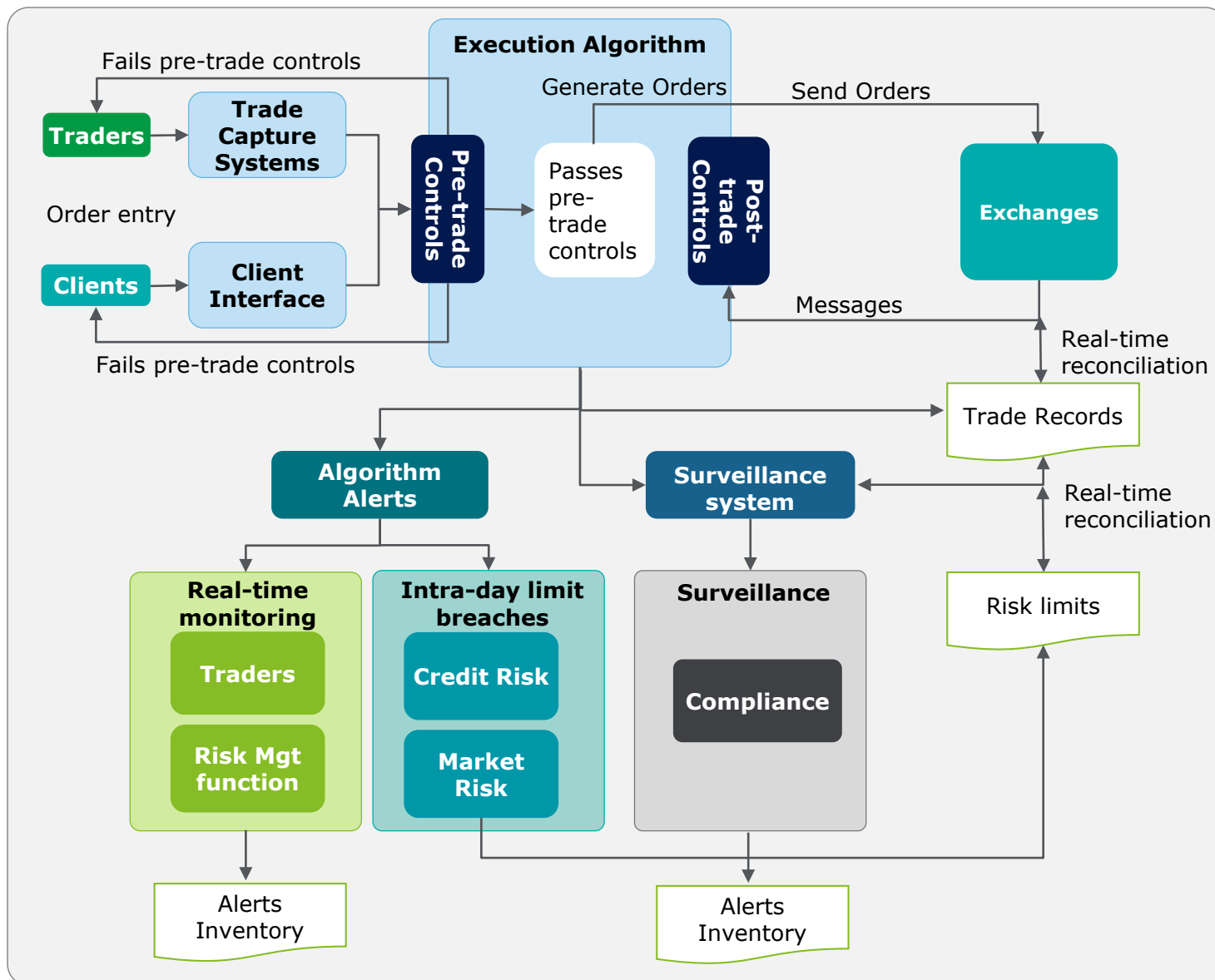
- Monitor and compliance with algorithmic trading policy
- Monitoring status of remedial action plans
- Review of key metrics and incidents
- Etc

Business Level Governance Forums

- Algorithm Inventory and documentation review
- Review of material changes
- Limit breaches
- Etc

Example Controls & Monitoring

Example flow for algorithm controls and monitoring for an execution algorithm



Pre-Trade Controls:

- Price, quantity, throttling etc
- Impermissible products checks
- Pre-trade risk checks

Post Trade Controls:

- Intra-day risk
- Real-time reconciliation of trading records

Real-time Monitoring

Monitoring for signs of disorderly market – examples could be:

- Market impact
- “Run-away algo” checks

Automated Surveillance

- Surveillance for suspicious trading activity
- Alerts available a minimum of T+1

4. Conclusion



Conclusion

Key takeaways to be successful

Senior Management Awareness & Oversight

- Significant regulatory focus in the coming years
- An appropriate control framework should be a priority
- Should be regularly on agenda of senior management

Stakeholder buy-in

- Crucial to obtain the buy-in of business, technology, 2LOD and 3LOD
- Education and awareness of strategic goals
- All need to be working towards the same objective

2nd line involvement

- 2nd line's role needs to be defined
- 2LOD involvement needs to be pervasive throughout the control framework

Skills & Resourcing

- 2nd and 3rd line need to be sufficiently skilled and resourced
- Need to commit appropriate funding to remedial actions



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